

REMARKS/ARGUMENTS

Reconsideration of this application is respectfully requested.

In response to the formality-based objections to the specification, typographical errors have been corrected at pages 8, 10 and 12 as noted by the Examiner.

In response to the formality-based claim objections, claims 1, 4 and 5 have been amended so as to avoid the Examiner's stated objections.

In response to the Examiner's rejection of claim 3 under 35 U.S.C. §101 because allegedly directed to non-statutory subject matter, claim 3 has been amended so as to now recite a computer-readable storage medium – and claim 4 has been cancelled without prejudice or disclaimer.

Accordingly, all formality issues are now believed to have been resolved in the applicants' favor.

The rejection of claims 1 and 3-5 under 35 U.S.C. §102 as allegedly anticipated by Porikli is respectfully traversed.

The claimed invention relates to image processing and, in particular, to an improvement in object detection for improving the detection of objects in an image. While foreground segmentation and shadow techniques are known, the inventors have recognized that, in some cases, the shadow removal techniques can remove segmented pixels which properly represent the objects of interest.

To overcome this problem, after the shadow removal processing, a morphological dilation operation is repeatedly applied on the segmented pixels to fill in any holes or bisections within the blobs of segmented pixels which were determined by the initial foreground/background segmentation.

The corresponding European counterpart application was recently granted with claims corresponding to those now pending in this U.S. case and, in the notice of allowance, the EPO Examiner stated:

"The morphological dilation operation is well known in the art for its ability to fill small holes or cracks in regions of digital images. However, the number of dilations or the size of the structural element used for carrying out the dilation depends on the application and is subject to change depending on the processed data. The proposed method repeatedly applies the dilation operator until the dilated region touches a boundary defined by a prior segmentation step. The number of dilations thus depends on the processed image. This solution is not known from, nor rendered obvious by, the prior art at hand and is therefore considered to involve an inventive step."

In Porikli, the passage cited by the Examiner only relates to a fast speckle noise removal filter. This is applied to the whole image and, therefore, Porikli developed the fast erosion-dilation filter to minimize processing time. The speckle noise removal is

repeated across the whole image until there are no more pixels to consider. It is completely silent regarding the processing defined in applicants' claims 1 and 5 elements c) and d) to limit the extent of the morphological dilation processing within the image (e.g., see applicants' specification at 12:3 to 13:24 for more details of this in the exemplary embodiment). That is, Porikli fails to disclose:

"c) segmenting as foreground, surrounding picture elements to those picture elements which are already segmented as foreground;
d) repeating step c) until picture elements which were not segmented as foreground after step a), would be or are segmented as foreground."

The rejection of claims 2 and 6 under 35 U.S.C. §103 as allegedly being made "obvious" based on Porikli in view of Sifakis is also respectfully traversed.

Regarding claims 2 and 6, these claims are allowable at least by virtue of their respective dependency on independent claims 1 and 5. However, even if this were not the case, the system described in Sifakis in combination with Porikli still fails to disclose the novel and inventive features c) and d). The processing of Sifakis is not concerned with shadow removal, but only with ensuring that every pixel is assigned a label of either foreground or background. The skilled person reading this document would only consider it as an alternative processing to that described in section 2 of Porikli. Absent

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hindsight knowledge of the applicants' invention, the skilled person could not arrive at the claimed invention from Porikli and/or Sifakis because there is nothing in these documents to suggest, let alone teach, the combination of features as claimed.

Accordingly, this entire application is now believed to be in allowable condition, and a formal notice to that effect is earnestly solicited.

Respectfully submitted,

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